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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,368	02/10/2004	David A. Pensak	13951.0002	9526

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EXAMINER

STEELMAN, MARY J

ART UNIT	PAPER NUMBER
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2191

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/774,368

Applicant(s)

PENSAK ET AL.

Examiner

Mary J. Steelman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02/10/04, 07/02/04, 02/23/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/2/04, 2/23/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-25 are pending.

Information Disclosure Statement

2. IDS received 07/02/04 & 02/23/06 has been considered. (Except England reference)

Drawings

3. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because submitted drawing FIG. 1 is informal. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

Claim Objections

4. Claim 13 is objected to. Claim 13 recites, "The apparatus of claim 13...", should be – The apparatus of claim 12...-- Replace '13' with '12'.

Claims 7, 14, and 22 are confusing. The application computer program communicates with a remote process, said process located remotely from both said execution environment and operating system (first execution environment and second execution environment)?

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 12 – 18 and 19-25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The terms “being operable to convert” in claim 12 and “capable of” in claims 14 and 19 fail to provide a physical transformation, or useful, concrete and tangible result.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-25 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent

Application Publication 2005/0204348 A1 to Horning et al..

Per claim 1:

A process for modifying an application computer program, said application computer program configured in its unmodified form to execute within a first electronic execution environment, said process comprising:

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Horning: [0006, [0008], binary code modification tool...perform obfuscating transformations...means for incorporating one or more tamper resistance mechanisms into the computer program

identifying boundaries of a subsection of said application computer program; modifying said subsection of said application computer program to a form which, when executed within the first electronic execution environment, triggers an invocation of a second electronic execution environment different from said first execution environment;

Horning: [0071-0072], obfuscation transformations to a target program procedures or modules [0090-0099], binary modification tools, identify basic blocks, procedures, insert instructions before and / or after other identified instructions, rewrite and / or modify, insert new functions....a

and incorporating with said application computer program control information enabling execution of the application computer program in the second execution environment.

Horning: [0081], obfuscated program will typically be functionally equivalent to the original program

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Per claim 2:

-wherein a boundary of said subsection is a flow control instruction.

Horning: [0092-0094], basic blocks, procedures

Per claim 3:

-the first execution environment is a computer operating system and the second execution environment is a debugging environment.

Horning: [0087], A variety of tools and techniques can be used to perform obfuscating transformation on a target computer program. [0594], provide internal tracing and debugging features.

Per claim 4:

-said step of modifying said subsection of said application computer program includes a step of adding an instruction that causes said operating system to transfer execution control to said debugging environment.

Horning: [0072], a software self defense control program...including...obfuscation transformations...to a target program; procedures or modules for adding tamper resistance measures to target program; and / or procedures or modules for applying watermarks...[0594], Provide internal tracing and debugging features...for generating (encrypted) trace and debugging messages...will support failure diagnosis...

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Per claim 5:

-said step of modifying said subsection of said application computer program includes a step of encrypting at least a portion of said subsection of said application computer program file.

Horning: [0073], cryptographic keys, encryption and decryption... [0096], ability to rewrite and / or modify existing instructions [0116], by encrypting the program's code

Per claim 6;

-said step of modifying said subsection of said application computer program further includes a step of relocating at least a portion of said encrypted portion of said subsection to a location distinct from the location of the corresponding unmodified subsection of said application computer program.

Horning: [0081], obfuscated program may demonstrate different space and time behavior [0099], ability to update other program sections such as the relocation information [0254], encrypting code sequences and inserting calls to, e.g., a support function that decrypts those code sequences prior to execution [0376], move pieces of code

Per claim 7:

-said step of modifying said subsection of said application computer program includes a step of adding functionality for the application computer program to communicate with a remote process not within either the first or second execution environments.

Horning: [0531-0533], External agents can send a key ...tell it to calculate the MAC value for

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the appropriate code region...Agent compares received MAC value...If the MAC values match then the SDP (self defense program) is deemed valid

Per claim 8:

-said remote process is a process that authorizes continued execution of the application computer program.

Horning: [0532], deemed valid

Per claim 9:

-said remote process is a cryptographic key management process.

Horning: [0531-0533], sending keys

Per claim 10:

-said application computer program communicates information about execution of said computer application program.

Horning: [0483-0484], [0490], suspected tampering should be reported externally for fraud detection...connect to an external site...external tamper monitoring agent.

Per claim 11:

-said information is information about tampering with said computer application program.

Horning: [0483-0484], [0490], suspected tampering should be reported externally for fraud detection...connect to an external site...external tamper monitoring agent.

Per claim 12:

An apparatus for executing an application computer program, comprised of:

a computer with an operating system;

an application computer program having a non-executable portion in a non-executable form; and

an execution controller providing an execution environment distinct from said operating system,

said execution controller being operable to convert the non-executable portion of the application program into a form that can be executed.

Horning: Convert encrypted portion into a form that can be executed. [0073]

Per claim 13:

-the non-executable portion of the application computer program includes an encrypted portion.

Horning: [0073]

Per claim 14:

-the application computer program includes a portion capable of communicating with a remote process not within either the operating system or the execution controller.

See rejection of limitations addressed in claim 7 above.

Per claim 15:

-the remote process is a process that authorizes continued execution of the application computer program.

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Horning: [0519], external site can inspect the watchdogs [0531], external agents force an DSP to prove its own validity using keys

Per claim 16:

-the remote process is a cryptographic key management process.

See rejection of limitations addressed in claim 9 above.

Per claim 17:

-the application computer program includes a portion capable of communicating to the remote process information about execution of said computer application program.

Horning: [0483-0484], [0490], suspected tampering should be reported externally for fraud detection...connect to an external site...external tamper monitoring agent.

Per claim 18:

-the information about execution of said computer application program is information about tampering with the computer application program.

See rejection of claim 11 above.

Per claim 19:

A process for executing a computer application program, comprising the steps of:

-launching an operating system;

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- launching an application computer program, said application computer program having a non-executable portion in a non-executable form;
- launching an execution controller, said execution controller providing an execution environment distinct from the operating system and capable of converting the non-executable portion of the application computer program to a form capable of execution;
- executing the application computer program within the execution environment of the execution controller.

See rejection of limitations addressed in claim 12 above. Using keys convert 'non-executable portion' (encrypted portion) to a form capable of execution

Per claim 20:

- the execution controller launches as a debugger.

See rejection of limitations addressed in claim 3 above.

Per claim 21:

- the non-executable portion of the computer application program is in encrypted form.

See rejection of limitations addressed in claim 13 above.

Per claim 22:

- the application computer program communicates with a remote process not under either the operating system or the execution controller.

See rejection of limitations addressed in claim 7 above.

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Per claim 23:

-the remote process is part of a cryptographic key management process.

See rejection of limitations addressed in claim 16 above.

Per claim 24:

-the application computer program communicates information to the remote process about execution of the application computer program.

See rejection of limitations addressed in claim 17 above.

Per claim 25:

-the information is information about tampering with the application computer program.

See rejection of limitations addressed in claims 11 & 18 above.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 6,701,439 B1 to Dunn

In the case of a suspected hacker or intrusion by an unauthorized entity,

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the fraud detection and nuisance reporting features 40 of the telecommunications switch 30 are employed to impede, discourage, and/or surveil the unauthorized entity. Ultimately, the hacker may be prosecuted under the wire fraud or harassment laws.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Steelman, whose telephone number is (571) 272-3704. The examiner can normally be reached Monday through Thursday, from 7:00 AM to 5:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Zhen can be reached at (571) 272-3708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mary Steelman

03/12/2007


